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EFFECT OF A NO-SMOKING POLICY ABOARD A U.S. NAVY AIRCRAFT CARRIER

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**Effect of a No-Smoking Policy
Aboard a U. S. Navy Aircraft Carrier**

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SUMMARY

Problem and Objective

Because of the negative health consequences of tobacco use and growing evidence of the health risks associated with environmental tobacco smoke (ETS), restrictive smoking policies have become widespread among many organizations and environments. The Commander Naval Air Force, U.S. Atlantic Fleet established a no-smoking environment within all U. S. Atlantic Fleet facilities, including aircraft carriers. The Atlantic Fleet carrier USS THEODORE ROOSEVELT (CVN-71) banned smoking entirely on July 4, 1993. The purpose of this study was to assess the impact of a no-smoking policy aboard USS THEODORE ROOSEVELT on the crew's smoking behavior and exposure to ETS, as well as crew attitudes regarding smoking policy.

Approach

All crew members aboard USS THEODORE ROOSEVELT were asked to participate in a baseline survey in June 1993, before a comprehensive no-smoking policy was implemented, and in a postintervention survey in December 1993, after the no-smoking policy was rescinded. The survey items covered tobacco use behavior, ETS exposure, crew attitudes related to smoking policy, and demographics.

Results

There was no significant change in the percentage of current cigarette smokers from baseline to postintervention. However, a small percentage of the postintervention survey participants reported that they had quit smoking when the no-smoking policy began. There were significant increases in participant's off-the-ship cigarette use, the number of cigarettes smoked per day, and smokeless tobacco use from baseline to postintervention. Exposure to ETS while aboard ship significantly decreased during the time that the no-smoking policy was in effect. In addition, there were small changes in attitudes regarding the implementation of the no-smoking policy.

Conclusions

Findings from this study suggest that the no-smoking policy aboard USS THEODORE ROOSEVELT had a positive effect on reducing exposure to ETS and a more complex effect on tobacco use behavior. A no-smoking policy may be the best way to protect nonsmokers' health; however, no additional significant benefits of the policy in terms of reducing overall smoking were seen in this study.

Effect of a No-Smoking Policy Aboard a U. S. Navy Aircraft Carrier

It is estimated that more than 400,000 Americans die each year as a result of cigarette smoking, accounting for one in every five deaths in America.^{1,2} Use of other forms of tobacco are also associated with significantly elevated morbidity and mortality,³ as is chronic exposure to secondhand, or environmental tobacco smoke (ETS).^{4,5} Because of the negative health consequences of tobacco use and growing evidence of the health risks associated with ETS,⁶⁻⁹ restrictive smoking policies have become widespread among many organizations and environments.^{10,11}

Worksite smoking policies have been assessed mainly in terms of their effect on employee smoking behavior. Several studies have shown that workplace smoking restrictions reduce cigarette consumption among employees; however, the estimates of consumption change vary across studies and in some cases are accompanied by slight increases in smoking outside of the work environment.¹²⁻¹⁹ Some studies have reported increases in smoking cessation following the implementation of a worksite smoking ban,^{13,14,16,17,19,20} though one study that utilized a control worksite found no evidence of change in smoking prevalence.¹⁵ Regarding the effect of smoking policies on ETS exposure, one recent study demonstrated a clear relationship between the level of smoking restrictions and the degree of exposure to ETS.²¹

A primary component of the U. S. Navy's health promotion policy is to create a healthy work environment that discourages the use of tobacco products and establishes appropriate environmental protective measures.^{22,23} Although this policy applies to all Navy personnel, it is not specified how the policy is to be implemented aboard a shipboard environment. In September 1992, the Commander Naval Air Force, U. S. Atlantic Fleet (COMNAVAIRLANT), introduced an extensively revised Force smoking policy, establishing a "no-smoking environment" within all U. S. Atlantic Fleet facilities, including aircraft carriers.²⁴ Although smoking was permitted aboard the carriers, it was restricted to a limited number of spaces that exhausted directly overboard and did not compromise the rights of nonsmokers. The policy also directed the carriers to set nonsmoking as a goal to be achieved at the earliest possible date.

Onboard the Atlantic Fleet carrier USS THEODORE ROOSEVELT (CVN-71) several strategies were implemented to try to prevent the exposure of nonsmokers to tobacco smoke

while allowing smoking onboard.²⁵ These included reduced smoking days, specific smoking hours, and limitation of smoking to a few spaces aboard ship. None of these strategies were deemed effective to adequately protect nonsmokers. Because the Environmental Protection Agency recently classified tobacco smoke as a human lung carcinogen⁸ and because nonsmokers were not adequately being protected from tobacco smoke aboard ship, the Commanding Officer of USS THEODORE ROOSEVELT announced in January 1993 that the use of tobacco products would be prohibited aboard ship starting July 4, 1993. This announcement was particularly significant because the implementation of the no-smoking policy would commence in the middle of a 6-month deployment where opportunities to smoke off-ship were not common. Such a policy implemented at sea is markedly different than that seen ashore where smoking is available off-duty or outside shore facilities in designated spaces. The policy aboard USS THEODORE ROOSEVELT would, in effect, eliminate smoking in its entirety.

The purpose of this study was to assess the impact of a no-smoking policy aboard USS THEODORE ROOSEVELT on the crew's smoking behavior and exposure to ETS, as well as crew attitudes regarding smoking policy.

Method

Study Population and Procedures

Approximately 3,000 male, naval personnel were assigned to the crew of USS THEODORE ROOSEVELT. All crew members were asked to participate in a baseline survey in June 1993, before the no-smoking policy was implemented, and in a postintervention survey in December 1993. The assigned airwing and embarked Special Purpose Marine Air Ground Task Force personnel were not included in the study since they are not permanent members of the ship's crew. The ship's Senior Medical Officer distributed both surveys aboard ship. The no-smoking policy was in effect from July 4, 1993, through November 21, 1993, a period of about four and one-half months.

Survey Instrument

The baseline and similar postintervention survey were four-page, self-administered, anonymous questionnaires (Appendix A). The survey items were grouped into four categories: (a) self-reported current tobacco use and history of tobacco use, (b) subjective exposure to ETS,

(c) crew attitudes related to smoking policy, and (d) demographics. Current smoking status was assessed by asking participants to classify themselves as a (1) never smoker, (2) former smoker, or (3) current smoker, and to answer the question "Have you smoked at least 100 cigarettes in your life?" Those participants who classified themselves as former or never smokers, or had not smoked at least 100 cigarettes were considered nonsmokers. Nonsmoker ETS exposure was measured using two questions: "How would you rate your overall exposure to other people's tobacco smoke aboard ship?" Response choices were (1) low, (2) moderate, and (3) heavy, and "How often are you exposed to other people's tobacco smoke aboard ship?" Response choices were (1) almost never, (2) seldom, (3) sometimes, (4) often, and (5) frequently. A complete description of all survey items is described elsewhere.²⁶

Results

Participation Rate and Participants

Baseline surveys were returned by 2,221 crew members (74% response rate), and 1,435 postintervention surveys were returned (48% response rate). A total of 765 crew members participated in both surveys (34% longitudinal response rate). Notably, 99% of the respondents had at least a high school education and the mean age was 25 years at baseline. The majority of the respondents were enlisted members with a median paygrade of E-4.

Tobacco Use Behavior

Looking at crew members who participated in both the baseline and postintervention surveys, the percentage of self-reported, overall current cigarette smokers did not change significantly over time (32% at baseline vs. 34% at postintervention) (Table 1). Still, descriptive results from the postintervention survey indicated that 73% of participants reported that their amount of smoking when they were aboard ship decreased as a result of the no-smoking policy. In contrast, when participants were asked specifically about their use of cigarettes when they were off of the ship, a significant increase was seen in the percentage of current smokers from 36% at baseline to 45% postintervention. The overall number of cigarettes smoked per day significantly increased from 15 cigarettes per day at baseline to 19 cigarettes per day postintervention. The percentage of participants who used smokeless tobacco significantly

increased from 9% at baseline to 13% postintervention with no significant change in the reported number of uses per day.

Table 1. Baseline and postintervention tobacco use

Tobacco Use	Baseline		Post		N	χ^2
	Percent	n	Percent	n		
Overall use of cigarettes	32.3	236	33.8	247	731	1.45
Use of cigarettes <i>when off of the ship</i>	36.3	263	44.3	321	724	34.56*
Use of smokeless tobacco	9.2	61	12.8	85	661	8.02*
	Mean	SD	Mean	SD	N	t
No. of cigarettes smoked per day	15.0	10.9	19.0	12.6	205	-3.99*
No. of uses of smokeless tobacco per day	4.69	2.47	5.11	2.40	36	-1.07

* $p \leq .05$

Smoking cessation. Although the percentage of self-reported current smokers did not change significantly between baseline and postintervention, 22% (132) of the postintervention survey participants who were smokers sometime before the implementation of the no-smoking policy indicated that they decided to quit smoking "for good" when the no-smoking policy aboard ship began. A total of 57% of those who indicated that they had quit "for good" reported that they were still nonsmokers at the time of the postintervention survey. Sixty-nine percent of the self-reported quitters indicated that they had quit specifically because of the implementation of the no-smoking policy rather than intending to quit for some other reason; and 46% of quitters reported that they were "somewhat" to "extremely likely" to remain a nonsmoker over the next year.

A comparison of self-reported quitters at postintervention to smokers who reported that they did not quit "for good" when the no-smoking policy aboard ship began was done. Self-reported quitters reported that they smoked fewer cigarettes per day at baseline than did nonquitters (11.2 vs. 14.4 cigarettes) and reported using tobacco for a shorter period of time than did nonquitters (7.6 vs. 8.6 years). However, these differences did not reach statistical significance.

ETS Exposure

Nonsmokers who participated in both the baseline and postintervention surveys rated their general exposure to ETS significantly lower at postintervention than at baseline (1.26 vs. 1.47, $t = 5.88$, $p \leq .05$). The percentage of nonsmokers who reported a heavy level of ETS exposure decreased from 11% at baseline to 3% at postintervention and the percentage of nonsmokers who reported a low level of ETS exposure increased from 64% at baseline to 77% at postintervention (Figure 1). Nonsmokers also rated the frequency of their exposure to ETS lower at postintervention than at baseline (2.11 vs. 2.22), although this decrease was not statistically significant. Seventy-seven percent of nonsmokers at postintervention reported that their exposure to other people's tobacco smoke decreased as a result of the no-smoking policy.

Attitudes Regarding Smoking Policy

Participants who completed both surveys perceived significantly less smoking cessation support provided by the ship and that the smoking policy aboard ship was being enforced less strictly at the time of the postintervention survey than at the baseline survey (Table 2). Participants' perception of the extent to which leadership followed the smoking policy did not change significantly over time.

Descriptive results of crew attitudes regarding the no-smoking policy for all postintervention survey participants are presented in Appendix B. Among all postintervention survey respondents, 47% favored the no-smoking policy, with 68% of nonsmokers and only 4% of current smokers favoring the policy. Participants rated the no-smoking policy between "somewhat unfair" and "generally fair." In addition, participants reported that they were "not at all allowed" to "slightly allowed" to contribute to decisions regarding the no-smoking policy.

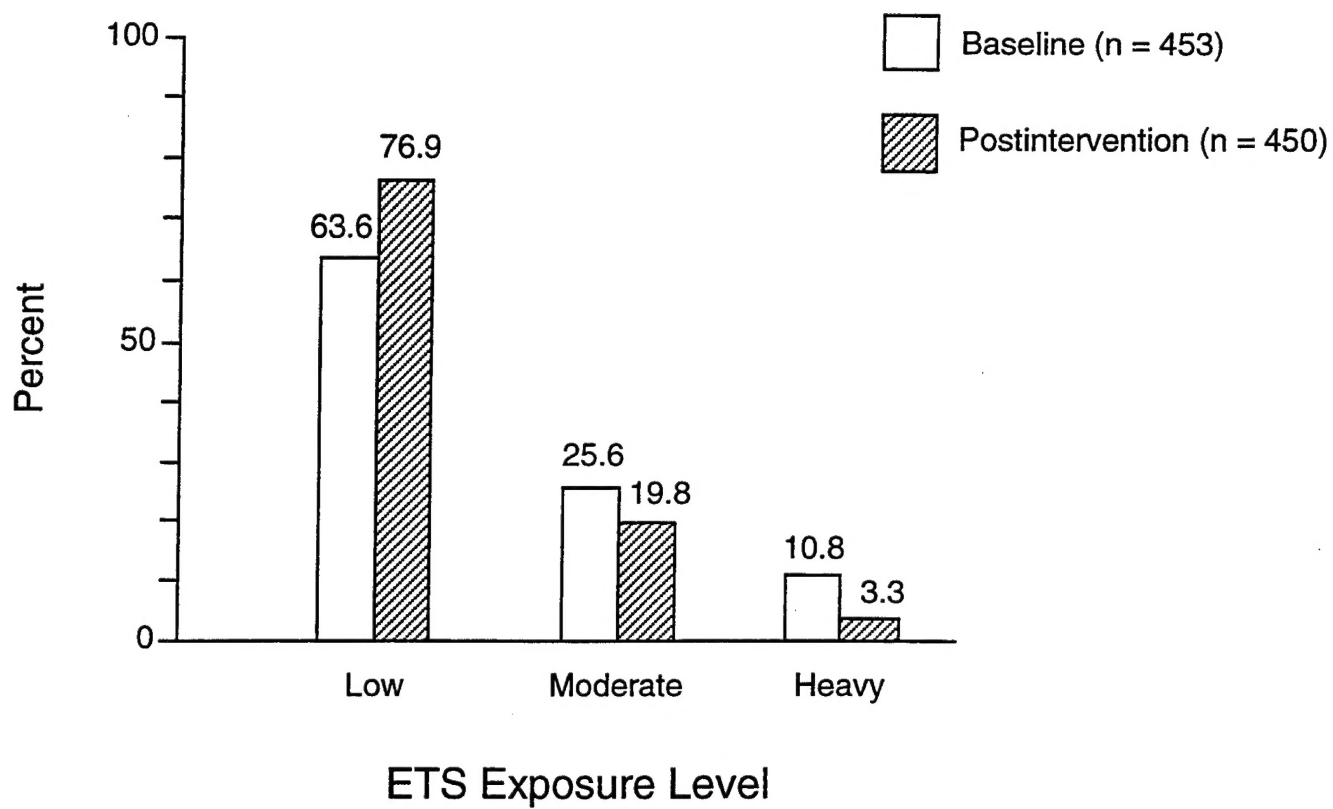


Figure 1. Percent of nonsmokers' overall exposure to ETS aboard USS THEODORE ROOSEVELT.

Table 2. Results of paired *t*-tests on baseline and postintervention attitudes

Attitudes	Baseline		Post		N	t
	Mean	SD	Mean	SD		
Cessation support ^a	3.05	.95	2.91	.98	749	3.79*
Strictness of policy enforcement ^b	3.29	.86	3.11	.92	742	4.64*
Leadership adhering to policy ^c	2.45	.98	2.41	.99	742	1.10

* $p \leq .05$; SD indicates standard deviation; ^aResponse values are: (1) None or very little, (2) Some, (3) Moderate, and (4) A lot; ^bResponse values are: (1) Not at all strictly, (2) Somewhat strictly, (3) Moderately strictly, and (4) Very strictly; ^cResponse values are: (1) Not at all, (2) Sometimes, (3) Usually, and (4) Always.

Discussion

To fully understand the results presented here, the circumstances and extent to which the no-smoking policy was implemented aboard USS THEODORE ROOSEVELT must be presented. In January 1993, crew members were informed that the ship was going to become smoke-free in July 1993. At the time of the baseline survey in June 1993, the ship was deployed and smoking was restricted to ten restrooms while aboard ship. On July 4, 1993 (approximately at the midpoint of a six-month deployment) the no-smoking policy was instituted essentially eliminating all smoking activity aboard ship. During port calls (roughly one port call for five to seven days every six weeks) sailors had the opportunity to smoke off ship while in a liberty status. However, the smoking ban aboard ship was rescinded on November 22, 1993, approximately one month after USS THEODORE ROOSEVELT returned from deployment. Smoking was allowed onboard again following new Navy policy that specifies that all surface ships must have at least one designated smoking area aboard ship; not to encourage smoking, but to provide a safe location for smokers.³⁰ The smoking ban was replaced by a restrictive smoking policy which designated only one area aboard ship for smoking. The postintervention survey was conducted in December 1993 during a more restrictive shipboard smoking policy than what was in effect during the baseline survey, but not during the smoking ban instituted during the last

three months of the deployment. The postintervention survey instructed participants to answer the smoking status and ETS items during the period that the no-smoking policy was in effect; however, some participants may have been confused and responded for the current time period. All results must be interpreted within the context of these circumstances and within policy implementation dates.

Findings from this study indicate that there was no change in the overall percentage of current cigarette smokers during the time that the no-smoking policy was in effect. However, a small number of participants did quit smoking and reported that they were still nonsmokers at the time of the follow-up survey. In addition, nearly 70% of these participants reported that they quit smoking specifically because of the no-smoking policy instituted during the last 3 months of deployment. These data suggest that a no-smoking policy may provide some smokers who desire to quit with an external impetus and a supportive environment in which to do so. However, long-term research data are needed to assess if these initial cessation efforts diminish over time and if these quitters will maintain their nonsmoking status. Still, these findings compare to a recent study conducted on Navy recruits that suggested that a "live-in" no-smoking policy during the eight weeks of recruit training encouraged smokers to quit.²⁷ Such findings are particularly encouraging given the deployed nature of the U. S. Navy and obvious "live-in" nature of shipboard life.

Unfortunately, there were significant increases in off-the-ship cigarette use, in the number of cigarettes smoked per day, and in smokeless tobacco use. While some studies have reported similar increases in smoking outside of the environment where the restricted smoking policy was instituted (i.e., compensatory smoking),^{17,18} the increase in tobacco use in this study may be more a function of deployment schedules and off-duty availability. Since the ship was deployed during the baseline survey, availability of tobacco was severely restricted for both on- and off-duty sailors. (The ship's store did not sell cigarettes four months before the no-smoking policy began and during the time that the policy was in effect.) When the ship returned from deployment, tobacco was much more accessible to sailors while off-duty; thus possibly explaining the increase in tobacco use outside of the ship environment. It is also possible that the percentage of reported smokers was artificially low at the time of the baseline survey since the no-smoking policy aboard ship was scheduled to commence only one month after the baseline survey was administered. Smokers may have taken advantage of the impending no-smoking policy to quit

prior to the survey or to report their intention to become a nonsmoker on the survey. This would have artificially lowered the number of reported smokers at baseline and shown an apparent increase in tobacco use on the postintervention survey when the no-smoking policy was no longer in effect and some of the early quitters were smoking again.

As predicted, nonsmokers in this study rated their exposure to ETS significantly lower on the follow-up survey following the implementation of the no-smoking policy. This finding is supported by a comprehensive study on the effect of smoking policies in California that showed restrictive smoking policies are directly related to the degree of exposure to ETS.²¹ The authors of this study concluded that the only way to fully protect nonsmokers' health in the workplace is with a smoke-free policy. Although, theoretically all ETS exposure aboard USS THEODORE ROOSEVELT should have been completely eliminated by the no-smoking policy, the significant reduction in subjective exposure to ETS is a very important step in realizing the Navy's goal to protect personnel from involuntary exposure to ETS in work spaces and living environments. The low amounts of ETS exposure that were reported while the no-smoking policy was in effect could have been caused by sailors who were not aware of the policy or when it took effect, or were "sneaking" or did not know that violating the policy would lead to adverse consequences.

Researchers have recommended that the organizational acceptance of a no-smoking policy is affected by the level of worker involvement in the development of the policy, organizational support for cessation efforts and leadership support for the policy, and clear enforcement procedures.^{28,29} In the present study, the perceived level of cessation support and strictness of enforcement of the no-smoking policy decreased over time. These implementation variables may have had an important impact on the crew's reaction to the policy and its effectiveness.

The strengths of this study include data collection from the entire population of the crew aboard USS THEODORE ROOSEVELT and a repeated-measures design. Limitations of the study include the reliance on self-reported measures for smoking behavior and ETS exposure, a low follow-up response rate and possible response bias, and the absence of a control group. It is possible that there may be some systematic bias in the self-reporting of smoking given that there was high-level, strong support for the no-smoking policy, which may have affected the results. However, self-report survey measures have been considered useful for classifying broad categories of ETS exposure levels.⁹ The loss of participants between the baseline and postintervention surveys may have implications for the generalizability of the findings. In

addition, Navy leadership and media attention given to the issue of smoking in the Navy makes it problematic to differentiate the effects of societal trends (both within the military and in the civilian sector) from the effects of the ship's no-smoking policy; therefore, results should be interpreted with caution.

In summary, findings from this study suggest that the no-smoking policy aboard USS THEODORE ROOSEVELT had a positive effect on reducing exposure to ETS and a more complex effect on tobacco use behavior. A no-smoking policy may be the best way to protect nonsmokers' health; however, no additional significant benefits of the policy in terms of reducing overall smoking were seen in this study. Recommendations for further study and consideration for future tobacco use policy implementation include combining additional educational and behavioral smoking prevention and cessation activities with a smoking ban; studying factors associated with compensatory smoking, including the extension of cessation efforts to spouses and families; and involving crew members in the process of smoking policy change and implementation.

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AIRLANT Tobacco Use Policy - Opinion Survey

Information to Participants

All carrier personnel are being asked to voluntarily complete this brief survey giving honest responses and opinions about AIRLANT tobacco use policy and restrictions. This information will be used to provide feedback to AIRLANT. Please answer all the questions honestly and to the best of your ability. Your responses are for research use only and will be kept strictly confidential. Data will be reported so that no individual participant can be identified and will not become part of anyone's official records. If you have any questions about this survey, please contact Ms. Suzanne L. Hurrado, Naval Health Research Center, San Diego, CA 92186-5122/DSN: 553-8469; Commercial: (619) 553-8469.

Privacy Act Statement

1. Authority: 5 USC 301, 10 USC 1071. 2. Purpose: Medical research information will be collected to enhance basic medical knowledge or to develop tests, procedures, and equipment to improve the diagnosis, treatment, or prevention of illness, injury or performance impairment. 3. Use: Medical research information will be used for statistical analyses and reports by the Departments of the Navy, Defense, and other U.S. government agencies, provided this is compatible with the purposes for which the information was collected. Use of the information may be granted to non-Government agencies or individuals by the Chief, Bureau of Medicine and Surgery, in accordance with the provisions of the Freedom of Information Act. 4. Disclosure: I understand that all information derived from the study will be retained at the Naval Health Research Center, San Diego, and that my anonymity will be maintained. I voluntarily agree to its disclosure to agencies or individuals identified in the preceding paragraph, and I have been informed that failure to agree to such disclosure may negate the purposes of the study.

Please circle one of the choices or print neatly in the blank.

- Ship currently serving on:
 1. USS AMERICA
 2. USS SARATOGA
 3. USS ENTERPRISE
 4. USS FORRESTAL
 5. USS GEORGE WASHINGTON
 6. USS JOHN F. KENNEDY
 7. USS THEODORE ROOSEVELT
 8. USS DWIGHT D. EISENHOWER

- What department do you work in?
 1. AIMD
 2. Air
 3. Communications
 4. Engineering
 5. EXEC/ADMIN
 6. Medical/Dental
 7. Navigation
 8. Operations
 9. SMMD/3M
 10. Supply
 11. Weapons/Mar Det
 12. Other

- Today's date: _____ / _____ / _____
Month Day Year

- LAST SIX digits of Social Security No.: ☐ ☐ ☐ ☐ ☐ ☐
(For study purposes only; cannot be used for personal identification.)

- Sex: 1. Male 2. Female

- Age: _____

- Highest level of education:
 1. Did not graduate from high school
 2. GED or ABE certificate
 3. High school graduate
 4. Trade or technical school graduate
 5. Some college
 6. 4-year college degree
 7. Graduate or professional study but no degree
 8. Graduate or professional degree

- Paygrade:

Enlisted	Officer
1. E-1	10. W-1
2. E-2	11. W-2
3. E-3	12. W-3
4. E-4	13. W-4
5. E-5	14. O-1
	15. O-2
	16. O-3
	17. O-4
	18. O-5
	19. O-6

OPNAV Report Control Number 6280-1

- On the average, how many minutes per day are you exposed to other people's tobacco smoke aboard ship?
_____ minutes per day 0. Not exposed

- How bothered are you by other people's tobacco smoke aboard ship?
 1. Not at all bothered
 2. Seldom bothered
 3. Somewhat bothered
 4. Quite bothered
 5. Extremely bothered

- How much physical discomfort does other people's tobacco smoke aboard ship cause you (irritated eyes, nose, throat, or lower respiratory tract, etc.)?
 1. No discomfort
 2. Some discomfort
 3. Moderate discomfort
 4. Great discomfort

- Where aboard ship are you typically exposed to other people's tobacco smoke? (Circle all that apply.)
 0. I am rarely exposed to other people's tobacco smoke aboard ship
 1. My usual work area
 2. Head
 3. Officer messing areas
 4. Officer messing areas
 5. Berthing area
 6. Designated "smoking areas"
 7. Other _____

ATTITUDES TOWARD SMOKING POLICY

- Are you aware of AIRLANT's smoking policy aboard ship that states "... a no-smoking environment shall be the norm for COMNAVAIRLANT ships"?
 0. No 1. Yes

- How did you find out about AIRLANT's restricted smoking policy aboard ship? (Circle all that apply.)
 1. Do not know about the policy
 2. POD notice
 3. Shipboard announcement (e.g., quarters)
 4. Division Officer
 5. LCPO
 6. Read the instruction
 7. Other _____

- Are you in favor of AIRLANT's restricted smoking policy aboard ship?
 0. No 1. Yes

- How fair do you think AIRLANT's smoking policy is?
 1. Very unfair
 2. Somewhat unfair
 3. Generally fair
 4. Very fair

- To what degree are you allowed to contribute to decisions regarding the smoking policy aboard your ship?
 1. Not at all allowed
 2. Slightly allowed
 3. Somewhat allowed
 4. Very much allowed

- How much support (e.g., smoking cessation classes and materials, incentives for quitting) has your ship provided to help smokers quit?
 1. None or very little support
 2. Some support
 3. Moderate support
 4. A lot of support

- Do you see leadership setting good examples of adherence to AIRLANT's smoking policy?
 1. Not at all
 2. Sometimes
 3. Usually
 4. Always

- How strictly is AIRLANT's smoking policy being enforced?
 1. Not at all strictly
 2. Somewhat strictly
 3. Moderately strictly
 4. Very strictly

- Which one of these statements best reflects your current use of any tobacco products?
 1. Smoke at work (including breaks)
 2. Do not smoke at work but use smokeless tobacco products (chewing tobacco or snuff) when at work
 3. Do not use tobacco products at work, but use tobacco products when not at work
 4. Quit using tobacco products altogether
 5. Never used tobacco products

- Do you plan to request a transfer off of your ship specifically because of the no-smoking policy?
 0. No 1. Yes

- What percent of Navy enlisted personnel aboard your ship do you think smoke? _____ %

- What percent of Navy officers aboard your ship do you think smoke? _____ %

As a result of AIRLANT's smoking policy ...?

32. Has the amount of cigarettes you smoke	Decreased	Stayed the same	Increased	NA/Don't use
33. Has your use of smokeless tobacco	1	2	3	4
34. Has your smoking when aboard ship	1	2	3	4
35. Has your exposure to other people's tobacco smoke when aboard ship	1	2	3	4
36. Has your smoking when not aboard ship	1	2	3	4

TOBACCO USE

37. Have you smoked at least 100 cigarettes in your life?

0. No 1. Yes

38. Please mark your current status for each tobacco product.

	NEVER USED	FORMER USER	CURRENT USER
a. cigarettes	1	2	3
b. chewing tobacco/ snuff or dip	1	2	3
c. cigars/pipe tobacco	1	2	3

39. When you are aboard ship, do you use any of these tobacco products?

	NO	YES
a. cigarettes	0	1
b. chewing tobacco/ snuff or dip	0	1
c. cigars/pipe tobacco	0	1

40. When you are not aboard ship, do you use any of these tobacco products?

	NO	YES
a. cigarettes	0	1
b. chewing tobacco/ snuff or dip	0	1
c. cigars/pipe tobacco	0	1

41. At what age did you first start using tobacco products fairly regularly?

0. NA, never have used tobacco
1. Was under 12 years old
2. 12 - 14 years old
3. 15 - 17 years old
4. 18 - 20 years old
5. 21 or older

42. For how many years have you used (or did you use) tobacco on a regular basis (do not include any time when you quit using tobacco)?

- 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15+ YEARS
99. NA, never have used tobacco
0. Less than one year

47. On the average how many days per month do you smoke cigars or a pipe?

0. Never in the past 12 months or
Don't use cigars or a pipe
1. Once or twice in the past 12 months
2. 3 - 6 days in the past 12 months
3. 7 - 11 days in the past 12 months
4. About once a month
5. 2 - 3 days a month
6. 1 - 2 days a week
7. 3 - 4 days a week
8. 5 - 6 days a week
9. About every day

48. On days you smoke cigars or a pipe, how many cigars or bowls do you usually smoke?

- 0/NA 1 2 3 4 5 6 7 8 9+
49. How many times have you (or did you) seriously try to quit using tobacco?

- 0 1 2 3 4 5 6 7 8 9+ TIMES
99. Never have used tobacco

51. Comments

50. Just thinking of the most recent time you tried to quit smoking, what method(s) did you use? (Circle all that apply)

0. NA, never have used tobacco products
1. Never have tried to quit
2. Civilian program or course
3. Military program or course
4. Psychologist or psychiatrist
5. Hypnosis
6. Special filters or holders
7. Lower tar and nicotine cigarettes
8. Nicorette (nicotine gum)
9. The "patch" (nicotine transdermal system)
10. With friends, relatives, or acquaintances
11. Gradually decreased the number
12. Substituted candy, gum, or food
13. "COLD TURKEY"
14. Other methods

Thank you for completing this survey!

USS THEODORE ROOSEVELT No-Smoking Policy Survey

Information to Participants

You are being asked to voluntarily complete this brief survey giving honest responses and opinions about the no-smoking policy aboard ship. Please answer all the questions honestly and to the best of your ability. Your responses are for research use only and will be kept strictly confidential. Data will be reported so that no individual participant can be identified and will not become part of anyone's official records. If you have any questions about this survey, please contact Ms. Suzanne L. Hurtado, Naval Health Research Center, San Diego, CA 92186-5122/DSN: 553-8469; Commercial: (619) 553-8469.

Privacy Act Statement

1. **Authority:** 5 USC 301, 10 USC 1071. 2. **Purpose:** Medical research information will be collected to enhance basic medical knowledge or to develop tests, procedures, and equipment to improve the diagnosis, treatment, or prevention of illness, injury, or performance impairment. 3. **Use:** Medical research information will be used for statistical analyses and reports by the Department of Defense, Navy, Defense, and other U.S. government agencies, provided this is compatible with the purpose for which the information was collected. 4. **Disclosure:** Information may be disclosed to non-government agencies or individuals by the Chief, Bureau of Medicine and Surgery, in accordance with the provisions of the Freedom of Information Act. 5. **Consent:** I understand that all information derived from the study will be retained at the Naval Health Research Center, San Diego, and that my anonymity will be maintained. I voluntarily agree to its disclosure to agencies or individuals identified in the preceding paragraph, and I have been informed that failure to agree to such disclosure may negate the purposes of the study.

Please circle one of the choices or print neatly in the blank.

1. What department do you work in?

1. AIMD
2. Air
3. Communications
4. Engineering
5. EXEC/ADMIN
6. Medical/Dental
7. Navigation
8. Operations
9. SMD/3M
10. Supply
11. Weapons/Mar Dot
12. Nuclear
13. Other _____

2. Today's date: _____

Month _____ Day _____ Year _____

3. LAST SIX digits of Social Security No.: _____

(For study purposes only; cannot be used for personal identification.)

4. Age: _____

5. Highest level of education (Circle only one response):

1. Did not graduate from high school
2. GED or ABE certificate
3. High school graduate
4. Trade or technical school graduate
5. Some college
6. 4-year college degree
7. Graduate or professional study but no degree
8. Graduate or professional degree

6. Paygrade: _____

- | | | | |
|--------|--------|---------|---------|
| 1. E-1 | 6. E-6 | 10. W-1 | 14. O-1 |
| 2. E-2 | 7. E-7 | 11. W-2 | 15. O-2 |
| 3. E-3 | 8. E-8 | 12. W-3 | 16. O-3 |
| 4. E-4 | 9. E-9 | 13. W-4 | 17. O-4 |
| 5. E-5 | | 18. O-5 | 19. O-6 |

7. Marital Status:

1. Single, never married and not living as married
2. Married or living as married
3. Separated/divorced/widowed and not living as married

8. Race:

1. American Indian/Alaskan Native
2. Black
3. Oriental/Asian/Hispanic
4. White
5. Other

ATTITUDES TOWARD NO-SMOKING POLICY

14. Were you in favor of the no-smoking policy aboard ship?

0. No
1. Yes

15. How fair did you think the no-smoking policy aboard ship was?

1. Very unfair
2. Somewhat unfair
3. Generally fair
4. Very fair

16. To what degree were you allowed to contribute to decisions regarding the no-smoking policy aboard ship?

1. Not at all allowed
2. Slightly allowed
3. Somewhat allowed
4. Very much allowed

17. How much support (e.g., smoking cessation classes and materials, incentives for quitting) did your ship provide to help smokers quit since the no-smoking policy aboard ship began?

1. None or very little support
2. Some support
3. Moderate support
4. A lot of support

18. How often did you see leadership setting good examples of adherence to the no-smoking policy aboard ship?

1. Not at all
2. Sometimes
3. Usually
4. Always

19. How strictly was the no-smoking policy aboard ship being enforced?

1. Not at all strictly
2. Somewhat strictly
3. Moderately strictly
4. Very strictly

20. How often did people "sneak" a cigarette aboard ship?

1. Almost never
2. Rarely
3. Sometimes
4. Usually
5. All of the time

TOBACCO USE

Since you have been back from your last deployment but before smoking was permitted onboard again on 22 Nov 93 ... [this applies to #21 through #23]

21. Please mark your status for each tobacco product.

	NEVER USED	FORMER USER	CURRENT USER
a. cigarettes	..... 1	..... 2	..... 3
b. chewing tobacco/snuff or dip	..... 1	..... 2	..... 3
c. cigars/pipe tobacco	..... 1	..... 2	..... 3

22. When you were not aboard ship, did you use any of these tobacco products?

	NO	YES
a. cigarettes	..... 0	..... 1
b. chewing tobacco/snuff or dip	..... 0	..... 1
c. cigars/pipe tobacco	..... 0	..... 1

23. When you were not aboard ship, did you use any of these tobacco products?

	NO	YES
a. cigarettes	..... 0	..... 1
b. chewing tobacco/snuff or dip	..... 0	..... 1
c. cigars/pipe tobacco	..... 0	..... 1

24. Did you quit smoking altogether (i.e., decide to quit smoking "for good") when the no-smoking policy aboard ship began?

0. No
1. Yes
2. NA

25. If you quit smoking altogether during your last deployment, you quit specifically because of the no-smoking policy?

0. No - I intended to quit smoking during the cruise regardless of the no-smoking policy aboard ship
1. Yes - I quit smoking altogether due to the no-smoking policy aboard ship
2. NA

26. If you quit smoking altogether when the no-smoking policy aboard ship began, how likely is it that you will remain a non-smoker over the next year?

0. NA
1. No chance at all
2. Slight chance
3. Somewhat likely
4. Quite likely
5. Extremely likely

27. If you have resumed smoking since being back from your last deployment, what was the main reason you started smoking again? (Circle only one response)

1. I never intended to quit smoking altogether
2. Too hard to quit
3. My spouse/partner smokes
4. Most of my friends smoke
5. To reduce stress
6. To lose weight
7. Other _____
8. NA

(Postintervention)

As a result of the no-smoking policy aboard ship from 4 Jul 93 to 21 Nov 93, ...?

28. Did the overall amount of cigarettes you smoke ... 1 2 3 4
29. Did your use of smokeless tobacco ... 1 2 3 4
30. Did your smoking when aboard ship ... 1 2 3 4
31. Did your smoking when not aboard ship ... 1 2 3 4
32. Did your exposure to other people's tobacco smoke when aboard ship ... 1 2 3

If you have never used any tobacco products, please circle here and go to #44.

1. I have never used any tobacco products

TOBACCO USE HISTORY

33. Have you smoked at least 100 cigarettes in your life?

0. No 1. Yes

34. At what age did you first start using tobacco products fairly regularly?

0. NA, never have used tobacco
1. Was under 12 years old
2. 12 - 14 years old
3. 15 - 17 years old
4. 18 - 20 years old
5. 21 or older

35. For how many years have you used (or did you use) tobacco on a regular basis (do not include any time when you quit using tobacco)?

1 2 3 4 5 6 7 8 9
10 11 12 13 14 15+ YEARS

99. NA, never have used tobacco

0. Less than one year

36. When was the most recent time you smoked a cigarette?

0. Never smoked a cigarette
1. 10 or more years ago
2. 6 - 9 years ago
3. 3 - 5 years ago
4. 1 - 2 years ago
5. 7 - 11 months ago
6. 4 - 6 months ago
7. 2 - 3 months ago
8. 5 - 7 weeks ago
9. During the past 30 days
10. Today

Please continue →

3

40. On the average how many days per month do you smoke cigars or a pipe?

0. Never in the past 12 months or
Don't use cigars or a pipe
1. Once or twice in the past 12 months
2. 3 - 6 days in the past 12 months
3. 7 - 11 days in the past 12 months
4. About once a month
5. 2 - 3 days a month
6. 1 - 2 days a week
7. 3 - 4 days a week
8. 5 - 6 days a week
9. About every day

41. On days you smoke cigars or a pipe, how many cigars or bowlfuls do you usually smoke?

0/NA 1 2 3 4 5 6 7 8 9+

42. How many times have you (or did you) seriously try to quit using tobacco?

0 1 2 3 4 5 6 7 8 9+ TIMES

99. Never have used tobacco

44. Comments regarding the no-smoking policy:

43. Just thinking of the most recent time you tried to quit smoking, what method(s) did you use? (Circle all that apply)

(If you have never used tobacco products or have never tried to quit circle your response here and go to #44.)

1. NA, never have used tobacco products
2. Never have tried to quit

- a. Nicorette (nicotine gum) ... 0 1
b. The "patch" (nicotine transdermal sys.) ... 0 1
c. Smoking cessation class - military ... 0 1
d. Smoking cessation class - civilian ... 0 1
e. "COLD TURKEY" ... 0 1
f. No-smoking policy aboard ship ... 0 1
g. Psychologist or psychiatrist ... 0 1
h. Hypnosis ... 0 1
i. Special filters or holders ... 0 1
j. Lower tar and nicotine cigarettes ... 0 1
k. With friends, relatives, or acquaintances ... 0 1
l. Gradually decreased the number ... 0 1
m. Substituted candy, gum, or food ... 0 1
n. Other methods ... 0 1

Thank you for completing this survey!

4

Appendix B. Descriptive results of postintervention attitudes regarding no-smoking policy

Variable	Smokers	Nonsmokers	Total
Favor no-smoking policy (%)			
0. No	95.7	31.6	52.8
1. Yes	4.3	68.4	47.2
<u>n</u>	445	926	1416
Fairness of no-smoking policy (%)			
1. Very unfair	74.4	19.7	37.3
2. Somewhat unfair	18.9	24.9	23.4
3. Generally fair	4.0	21.3	15.7
4. Very fair	2.7	34.2	23.6
Mean	1.35	2.70	2.26
SD	.69	1.13	1.19
<u>n</u>	445	931	1421
Degree allowed to contribute to no-smoking policy (%)			
1. Not at all allowed	87.8	69.7	75.5
2. Slightly allowed	7.7	15.2	13.0
3. Somewhat allowed	3.6	9.7	7.5
4. Very much allowed	.9	5.3	4.0
Mean	1.18	1.51	1.40
SD	.52	.87	.79
<u>n</u>	442	919	1405
Cessation support provided (%)			
1. None or very little support	16.9	8.5	11.2
2. Some support	38.1	22.0	27.2
3. Moderate support	28.6	28.8	28.7
4. A lot of support	16.4	40.7	32.9
Mean	2.45	3.02	2.83
SD	.96	.98	1.01
<u>n</u>	433	904	1377
Leadership following no-smoking policy (%)			
1. Not at all	20.8	18.4	19.1
2. Sometimes	40.0	37.2	38.2
3. Usually	24.5	27.5	26.5
4. Always	14.6	16.9	16.2
Mean	2.33	2.43	2.40
SD	.97	.98	.97
<u>n</u>	432	923	1395

Appendix B (cont.) Descriptive results of postintervention attitudes regarding no-smoking policy

Variable	Smokers	Nonsmokers	Total
Strictness of enforcement of no-smoking policy (%)			
1. Not at all strictly	5.3	6.0	5.8
2. Somewhat strictly	20.0	25.0	23.3
3. Moderately strictly	28.9	30.6	30.2
4. Very strictly	45.9	38.4	40.8
Mean	3.15	3.01	3.06
SD	.92	.94	.93
<u>n</u>	436	929	1406

SD indicates standard deviation.

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13. ABSTRACT (Maximum 200 words) The purpose of this study was to assess the impact of a no-smoking policy aboard the Atlantic Fleet carrier USS THEODORE ROOSEVELT (CVN-71) on the crew's smoking behavior and exposure to ETS, as well as crew attitudes regarding smoking policy. All crew members aboard ship were asked to participate in a baseline and postintervention survey. There was no significant change in the percentage of current cigarette smokers from baseline to postintervention. However, a small percentage of the postintervention survey participants reported that they had quit smoking when the no-smoking policy began. There were significant increases in participant's off-the-ship cigarette use, the number of cigarettes smoked per day, and smokeless tobacco use from baseline to postintervention. Exposure to ETS while aboard ship significantly decreased during the time that the no-smoking policy was in effect. Findings from this study suggest that the no-smoking policy aboard USS THEODORE ROOSEVELT had a positive effect on reducing exposure to ETS and a more complex effect on tobacco use behavior. A no-smoking policy may be the best way to protect nonsmokers' health; however, no additional significant benefits of the policy in terms of reducing overall smoking were seen in this study.				
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